

EXCERPTS FROM THE DEPARTMENT RECORD

- 2. DEP DOCUMENT: “Answers to Public Meeting Questions & Concerns”, dated February 11, 2009.**

**This document was distributed to the Interested Parties
on April 7, 2009**

**ROLLINS WIND PROJECT
PUBLIC MEETING QUESTIONS/CONCERNS
FROM FEBRUARY 11, 2009**

Answers to the interested party questions submitted to the Department during the review of the Rollins Wind Project in Lincoln, Winn, Burlington, Lee and Matawaukeag. The questions have been answered by various State agencies and the applicant as indicated.

Wildlife:

Question:

Bird & Bat Studies: Why were surveys only conducted on the Rollins Mountain (northern portion) of the project and not for the Rocky Dundee area (southern portion) of the project site?

Answer:

The Department of Inland Fisheries and Wildlife (MDIFW) states that the Rocky Dundee area was initially a separate phase of the project; therefore, MDIFW had the applicant focus their survey efforts on the Rollins Mountain area (Rollins North). However, at some point during the planning process, the applicant made the decision to combine the two areas into one project. At that time, the applicant's wildlife consultants (Stantec), met with MDIFW to discuss the need for two separate sets of studies. MDIFW concluded that given the proximity of the two ridgelines, a separate study was not warranted and noted that there are other wind power projects in the State where this issue has also been discussed.

MDIFW states that the survey suggested that passage rates and flight heights are believed to be similar given the close proximity of the Rollins and Rocky Dundee sites. In fact, these two metrics are quite similar to those recorded at the Stetson, Oakfield, Mars Hill, and Number Nine projects. It should be noted that MDIFW required no additional pre-construction studies for birds and bats for the second phase of the Stetson Mountain Wind Power project.

Question:

Eagle Nests: What are the potential issues facing eagles in the Upper Pond and Folsom Pond locations?

Answer:

MDIFW states that the eagle nest on Upper Pond (BE468A) is located approximately one mile from the closest string of wind turbines proposed for the Rocky Dundee area. MDIFW further states that they do not have any concerns regarding wind power projects being located appropriately in regards to eagle nests. MDIFW states that they will be advocating for post-project monitoring with this and other wind power projects where, these projects neighbor the outskirts of an eagle territory. MDIFW states that they are not aware of an eagle nest on Folsom Pond.

Question:

Why wasn't there a more comprehensive avian research effort conducted in the study area?

Answer:

MDIFW states that the avian studies requested of the applicant are consistent with what is being requested by MDIFW for other wind power projects in Maine and are similar in scope and focus around the country. In some instances, MDIFW states that they are requiring more than is being asked by other states. MDIFW further states that additional studies that lack objectives closely tied to evaluating the risks to birds and bats do not add value to a project, but instead may dilute other more carefully designed studies by drawing field effort away from them.

Question:

Appendix 7-2: Refers to the Bird & Bat Survey (BBS) Topsfield Route: Why wasn't there a study done within closer proximity to the project site? Isn't the Topsfield study too far away to be representative of the project area?

Answer:

MDIFW states that the data associated with Appendix 7-2 was not requested by their department and that the survey route is not consistently run from year to year and only offers generalized information of some of the avian species found in the area. There is an additional bird and bat survey (BBS) route that runs along Route 168 as it passes thru the town of Winn before heading off to the east. This would be the closest BBS route to the project area. In either case, it is unclear how species found on these routes would help understand what risk is posed by the proposed project.

Question:

Loons: Why were there no direct studies or discussion included in the application?

Answer:

MDIFW states that they did not request studies specific to loons, as the Department does not anticipate that the local loon population or migrating loons will be adversely impacted by the project. Post-construction mortality studies will document any loon mortalities, though it is unlikely any will occur.

Question:

What are the acceptable levels of mortality on birds, raptors & bats?

Answer:

MDIFW states that avian migration through Maine (and theoretically bat migration as well) is fairly diffuse, typically referred to as "broad front" migration. In mountainous regions, high peaks such as those over 3,000 to 4,000 feet may influence bird movement locally by diverting passage of some individuals around, rather than over summits. Such behavior has not been seen for smaller mountains and ridgelines such as at Rollins and Stetson Mountain. The challenge facing MDIFW is that there are only two other

operating wind power projects in Maine, and the Stetson Project only began operations in January 2009. Therefore, at this time with limited post-construction mortality data available, it is difficult to determine what level of avian mortality is expected, and more importantly what level of mortality is acceptable.

Furthermore, MDIFW states that mortality must be reviewed on a species by species basis. Is the species common? Does it breed in Maine or is it a transient? Is the population stable, increasing, or decreasing? What is the local, state, or regional perspective with regard to population size and trend? Is the species listed by MDIFW or the USFWS?

The larger question is not at the project-by-project level, but the cumulative impact statewide and over time. Post-construction mortality studies therefore become that much more important in an effort to answer this question. Another major question is how to use pre-construction surveys to better predict potential post-construction avian mortality. With more of these projects coming on line in Maine and neighboring states, MDIFW hopes to have a better understanding of this issue in the near future.

Question:

Bats: What are the effects of wind mills on bats? What about Barotrauma?

Answer:

MDIFW states that they are aware of some studies that link barotrauma in bats to wind power projects. However, MDIFW further states that the more important question is the overall bat mortality related to the Rollins Wind Project, and other wind power projects in the State.

Question:

Will the proposed project cause degradation of wildlife habitat?- Margie Deschene

Answer:

MDIFW states that their department's focus is on habitats associated with endangered, threatened, or species of special concern, and habitats included as Significant Wildlife Habitats (SWH) under the Natural Resources Protection Act (NRPA). Specific to the Rollins Project, this includes: SVPs, Inland Waterfowl & Wading Bird Habitats (IWWH), Deer Wintering Areas (DWA), and the bald eagle nest (BE468A). MDIFW does not focus on the general habitat types associated with the project area, most of which is working forest intersected with gravel roads, or already developed to some degree.

Both IWWHs and DWAs are identified within the proposed transmission line that would connect from Rollins Mountain north to Mattawamkeag and MDIFW is working with the applicant to avoid, minimize and mitigate negative impacts to these habitats as necessary.

Question:

Can bat populations sustain huge losses of up to 5 million per year?-Mary Beth Nolette

Answer:

MDIFW states that this question appears to be of a national scope and that they are focused on the Rollins Project and the other wind power projects in Maine. However, the Department does not have the information to answer such an all encompassing question or to comment on the accuracy of the statement.

Furthermore,, to date, only the Mars Hill Wind power Project has provided any post-construction bat mortality data for Maine. In 2007, 24 bat fatalities were found and associated with the project and five in 2008. After reviewing and including data from searcher efficiency trials and scavenger carcass removal trials, an estimate of 19 bat fatalities per year was estimated for the Mars Hill Project. Again, MDIFW is not only concerned about bat fatalities at the project level, but at the statewide level as well.

Question:

Effects on canadian lynx? -Michael Thurlow

Answer:

MDIFW states that they consider the lynx to be transitory within the Rollins Wind project area and they do not foresee any negative impacts on lynx due to project construction or operations.

Fisheries:Question:

What are the effects on Atlantic salmon due to impacts on water quality? - Michael Thurlow

Answer:

DMR states that their agency is only concerned with the impacts from the transmission line from Rollins North to the interconnection in Mattawamkeag, as the transmission line will cross several streams that potentially have Atlantic salmon in them (DMR does not currently have the capacity to survey many streams in the Penobscot basin but have observed juvenile salmon in these streams over the years). As with any development project, they are concerned with road construction, road-stream crossings, and riparian cover over streams.

No new roads will be constructed for this portion of his project; however, the existing roads may still potentially have an affect on the stream environment. For example, DMR states that there is at least one road located near Mattakeunk Stream with a culvert that is undersized and set too high causing a backwater situation. DMR has been working with Project SHARE in the Downeast rivers to remedy these types of situations (increase stream connectivity) and have found that juvenile salmon may use smaller streams as summer refugia if the larger streams become too warm during the summer, especially during drought conditions. Consequently, smaller streams are very important to juvenile salmon for survival. However, DMR states that even though the applicant is not the

landowner, it nonetheless would be a good thing if this particular culvert was fixed. DMR also states that they do not know the condition of the existing roads insofar as contributing to sedimentation and erosion into streams, however, they are working to eliminate many sources of erosion and sedimentation logging roads in the Downeast river landscape.

DMR emphasizes that salmon are sight feeders, so water clarity is important for feeding and that any sedimentation/erosion caused by the development will have an effect on local populations. Chronic exposure to sedimentation/erosion will have population level effects on salmon. In addition, loss of riparian cover as part of a vegetation management plan for the transmission line corridor could affect salmon populations near the crossing and increased solar radiation could tip the scale towards less desirable habitat. However, as the application indicates, siting the towers close to streams will be beneficial as this will allow for taller vegetation in the riparian zone. DMR further explains that less overhead cover at smaller streams and less vegetation at larger stream scales means that less terrestrial insects falling into the water and providing less food for fish.

DMR further recites that two main issues being raised include: 1) Will the proposed project increase sedimentation and erosion into salmon streams? and 2) Will the proposed transmission line corridor affect stream temperature?

In answering these questions, DMR states that the proposed project most likely will not increase erosion and sedimentation into the stream, as the developer will be utilizing an existing road network to install the transmission line. DMR further states that there is at least one opportunity to increase stream connectivity. Furthermore, as with any stream crossing, any time you open the canopy, there will be an increase in solar radiation and an increase in stream temperature. However, based on discussions with the applicant and in reviewing their proposed vegetation management plan for the corridor, the transmission line corridor was placed at stream crossings that should minimize effects on stream water quality.

Therefore, based on the information presented to DMR by the applicant, DMR states that the proposed project will have negligible effects on water quality.

Botanic Characteristics:

Question:

There are floating islands on Long Pond & Caribou Pond with rare plants and trees, yellow pond lilies, white lady slippers. Other plants include pitcher plants, rare sundews and a rare variety of orchids. How will these floating islands be impacted?—Mary Beth Nolette

Answer:

The Maine Natural Areas Program (MNAP) states that there would be no impact from this project on the flora of the floating islands in these lakes, and that there are no documented occurrences of rare plants on these islands or in these lakes. Furthermore,

the plants that are referred to are not as common as species like sugar maple or Canada may flower, but they are not sufficiently uncommon to be rare. These species are found in numerous sites throughout the state where habitat is appropriate (peat lands and lakes).

Vernal Pools & Wetlands:

Questions:

Only 25' setback around wetlands and streams. What happened to the 75' setback?-Mary Beth Nolette

There are many vernal pools in the area and according to the application, the applicant has stated that they will cut everything that is 8-10 ft or taller w/in 750' habitat area, which will allow sunlight into these areas, causing premature drying of pools. How is this allowable?- Mary Beth Nolette

Vernal Pools: How will vernal pools be impacted from construction and should there be an independent study done?

Many vernal pools in the area are not included on the map. Is the survey complete? Will the pools be checked for fairy shrimp in early spring? - Mary Beth Nolette

Answer:

The Department states that in accordance with the Natural Resources Protection Act, Chapter 310, Wetland and Waterbodies Protection Rules, the applicant has proposed the following setbacks:

In the area located within 75 feet, measured horizontally, of the normal high water line of a great pond, river, stream or brook or the upland edge of a coastal wetland and freshwater wetland is regulated as a protected area. However, if a person has no other alternative, impact to this 75 foot setback area is allowed provided that avoidance and minimization has been accomplished to the greatest practical extent. In this case, a 25 foot buffer must be maintained.

Wetland impacts have been avoided and minimized to the greatest practical extent, on this project site, as described in Section 1A of the application. Several alternatives for the placement of the turbines, connector line route and transmission line route were examined and the least environmentally damaging alternatives were chosen based on the data that was collected.

In accordance with Section 10 of the application, the applicant proposes to maintain 75 foot buffers around streams containing salmon habitat as well as around the 250 foot perimeter of vernal pool located within the right of way (ROW). The applicant also proposes to maintain 25 foot buffers around all other streams.

MDIFW states that they have worked alongside the applicant to develop and provide comment on vernal pool studies. Results of the survey effort are provided to MDIFW and potential conflicts or impacts are addressed. MDIFW's position on these habitats as

well as other wildlife habitats included within the Natural Resources Protection Act (NRPA) are to avoid impacts, minimize impacts if avoidance is not possible, and to mitigate for lost habitat. Only Significant Vernal Pools (SVPs) are addressed by NRPA and SVPs include both the pool and a 250 foot buffer around the pool. In addition, under Site Location of Development, MDIFW recommended to DEP that there be less than 25% conversion impacts out to 500 feet around SVPs. In this instance, one SVP will not be impacted out to 500 feet. The other is estimated to have a total area impact of 19.2 % between the 250 and 500 foot area which meets the additional recommendations set forth between MDIFW and DEP.

Survey efforts for the Rollins Mountain Project included only two SVPs located in the vernal pool study. According to the applicant, neither of these SVPs is within the project area. MDIFW does not see the need for an independent study of the vernal pool survey effort, nor does it currently anticipate further surveys in the spring of 2009. In addition, MDIFW could not find any information in the application that stated the "applicant would remove all vegetation that is 8-10 feet or taller and within 750 feet of the vernal pool. The remaining vernal pools while not regulated by DEP may still be regulated by the Army Corps of Engineers (ACOE).

According to Stantec, a minimum 75-foot buffer, as measured for the edge will be established for SVPs, vernal pools, and potential vernal pools crossed by the transmission line. There will be no herbicide use within the 75 foot buffer. Prior to construction, only capable trees greater than 8-10 feet tall will be removed. No other vegetation, other than dead or danger trees will be removed. In summary, clearing the ROW will not result in greater than 25% of the vernal pool habitat envelope being impacted.

Other Studies

Questions:

Should there be a comprehensive biological study for each lake within 5 miles of the project site using the standards of the Maine Wild land Lake Assessment Work Plan? Should there be an evaluation of all lakes within 3 miles of the project using Wild land Lakes Assessment technique to gather baseline of information needed to accurately evaluate the changes on unique and rare species? Can we use stimulus money to do independent studies of the area? - Mary Beth Nolette

Answer:

MDIFW states that the Maine Wildlands Lake Assessment is a documented completed in 1987 and was part of an effort by the Land Use Regulation Commission (LURC) to establish a systematic base of natural resource and land use information for lakes ten acres or greater within LURC jurisdiction.

While the assessment did include information on fisheries and wildlife, the majority of issues are not specific to MDIFW's legislative mandate, as they are more pertinent to regulatory agencies such as LURC, DEP, and local Planning Boards. In addition, the intent of the work was specific to lakes and associated riparian and shoreland areas.

The proposed project is not expected to negatively impact any wildlife or fisheries resources specific to any of the lakes or ponds in the area, or their associated shoreline and riparian areas.

Historic Preservation:

Question:

The sensitivity assessment for Euro-American archeological resources was based on cartographic evidence from 19-20th century maps. The application states that Euro-American settlement in the area began in 1820's. However, a settlement did exist in 1750 in Rocky Dundee, accessed via the river (not roads). Site models used for sensitivity assessment- one variable was proximity to transportation systems. (See pg 6 of application). This settlement predates the maps used to make the assessments on. Why has this information not been included and reviewed as part of the application?— Nadia Wotton

Answer:

MHPC commented that the interested parties are correct in stating that the model used for this study was in fact based on 19th and early 20th century sources. MHPC is aware that this model occasionally results in earlier sites being missed, however, MHPC further states that for most areas throughout the state, that this model works well. If there is the probability of earlier sites being located in an area, MHPC uses a different model to identify these sites. MHPC commented that it has no credible evidence that there was an early occupation of this area by a Scottish settlement and the evidence provided by the interested parties does not establish the existence of such a settlement. Therefore, MHPC states that they are satisfied with the historic archaeological survey that was conducted for the proposed project and are confident that no historic archaeological sites exist within the project area.

MHPC states that the term "windshield survey" is misleading, as it does not adequately convey the actual work involved in this type of survey. MHPC states that this survey technique is used and recognized by the MHPC as well as by other archaeologists throughout the state. All areas where occupation is possible as suggested by vegetation, stone walls, other signs of human activity or simply a flat dry area suitable for a house, receive a thorough walk-through as part of the survey. MHPC states that this survey technique has proven successful over the years and that they are satisfied with the survey methods undertaken by the applicant for this proposed project.

Question:

D. Hook cellar hole (pg. 7 of application.) The applicant states that if the road is widened in this area, an archaeological survey will need to be completed prior to any road work being done. How can we assure that this archeological survey will be done before any road work is allowed to begin?— Nadia Wotton

Answer:

MHPC states that the D. Hook cellar hole is not located within the area to be impacted by the proposed project; however, it is in close proximity to an existing unnamed gravel road that will be used as part of the proposed project. To ensure no adverse impact on this historic site, if the portion of the existing access road that is located adjacent to the D. Hook Homestead needs to be relocated during the construction of the project, an archaeological survey must first be completed and submitted to the Department for review and approval prior to any construction occurring at this location.

Question:

Visibility question (pg. 5 of application). A more detailed survey analysis of the potential viewshed from historical locations was underway but had not completed when the application was submitted. Has this survey been completed yet?- Nadia Wotton

Answer:

MHPC states that the analysis of the project's potential visual impacts to historic properties has been completed. According to this analysis, most of the identified historic properties will have no view of the project facilities due to intervening development, topography or vegetation. There are two properties that are located at a distance of approximately four miles from the nearest turbine that will have intermittent views of turbine blades, however, these views will not adversely affect the historic character defining features of these historic properties.

Economic Feasibility:Question:

Transmission line stability- blackouts. Is Stetson approved yet for power transmission over the lines to southern ME and onto NE?- No according to First Wind this past summer. Has anything changed? -Roper

Answer:

According to the Land Use Regulation Commission (LURC), Stetson went on-line on January 22, 2009.

Questions:

Who issued to approval for the transmission of the power? Did ISO- NE issue an approval to Evergreen to upgrade the line?

Answers:

In order to fully respond to these questions, the applicant further refined these questions and provided answers.

1. What is the process for verifying that the Rollins Wind Project can connect to the power grid?

In order to connect a new generating resource such as the Rollins Wind Project to the high voltage grid, Evergreen must follow a specific sequence of applications, studies, and approvals as approved by the Federal Energy Regulatory Commission and administered by the Independent System Operator for New England (ISO-NE). This process, a System Impact Study or SIS, is designed to ensure that the proposed project will not adversely affect the reliability and stability of the bulk transmission grid. The SIS is an engineering, reliability-based analysis focused on the standards that relate to the stability and reliability of the transmission system.

First Wind received the draft SIS from ISO-NE for the Rollins North turbine string in October 2008. The draft SIS concluded that "The steady state and stability results of the Interconnection System Impact Study reveal that the Project has no adverse impact on the reliability, stability and operating characteristics of the Power system including the New England bulk power transmission system, the interconnecting transmission owner's transmission facilities, the transmission facilities of another transmission owner, or the system of a market participant. No network upgrades are needed except those directly related to the Project's interconnection."

First Wind received the draft SIS from ISO-NE for the Rollins South turbine string in January 2009. The study concluded that "the steady-state, stability, and short-circuit results of the [Rollins South] Interconnection System Impact Study revealed that the Project has no adverse impact on the reliability, stability and operating characteristics of the New England bulk power transmission system when dispatched against local area generation. No network upgrades are needed except those directly related to the Project's interconnection."

2. What is the ISO/BHE commissioning and testing process?

Within the project, each turbine is individually tested and commissioned. Leading up to the energization of any of the systems, there are check lists and registration procedures involving Bangor Hydro and ISO-New England. The testing and commissioning of the electrical transmission systems are supervised by the utility and ISO-NE at the appropriate level for the two organizations. ISO-NE has supervisory communications and continuous telemetry links all the way to the generator substation, and control of the generation. BHE has the substation and local electric system oversight.

Question:

Economic viability should cover more than just outside financing. Should provide real data amounts from current installations. Real customer demand should be compared to production data to make an accurate assessment of the benefit of future industrial installations- Mary Beth Nolette

Answer:

The Public Utilities Commission (PUC) states that generation facilities have been deregulated in Maine, therefore, the PUC does not conduct an assessment of the

economic viability of wind projects. The costs of developing an uneconomic facility are on the project's shareholders, not Maine electricity ratepayers.

Question:

Conflicting information on estimates of how much power will actually be produced compared to the output rating that is claimed by the wind industry. The variable nature of the wind combined with the operating limits of the turbine and congestion in transmission lines doesn't provide reliability of supply at the times of peak demand-
Mary Beth Nolette

Answer:

PUC states that because of its intermittent nature, wind power is somewhat less valuable than other types of generation in planning to meet load at peak times. If congestion does exist, the project may have less reliability value. However, the project will have value in lowering the cost of energy since the energy has no cost when the wind is blowing. In addition, the project will have an environmental benefit to extent fossil fuel is displaced when the project is operating.

Question:

If the turbines generate an overflow of energy, can the Lincoln area buy up the overflow instead of transporting it away and losing up to 50% on the transport?- Rainer Egle

Answer:

PUC states that some electricity is lost when transmitted, but the amount is much lower than 50%. As a general matter, electricity flows accordingly to the laws of physics- regardless of any financial transactions (such as a purchase arrangement among a buyer and seller). Generated electricity will be absorbed by the nearest load. If there is not enough nearby loads to absorb all the electricity, it would flow over the transmission lines and there will be losses. The greater the distance, the greater the losses. The amount of losses is thus a function of the configuration of the system and would not be affected by a purchase from customers in the Lincoln area.

Question:

Is the current grid capable to transport the energy with as few losses as possible to the end users?- Rainer Egle

Answer:

Bangor Hydro states that the current grid is not capable to currently transport energy, as there is congestion on the existing system that connects Rollins to the New England grid. Congestion occurs when there is more generation than transmission capacity to transport the power to end users. Currently that situation exists in the Lincoln area. However, Bangor Hydro has published plans to alleviate this congestion by way of some substantial infrastructure upgrades by the end 2010. It is likely that the situation will be resolved sooner than that.

In addition, Bangor Hydro states that losses are a function of the size of the wire used on the transmission line and the distance power is carried over the system to reach the end user. It is difficult to estimate the losses on an individual basis because the losses are a nonlinear function of the total amount of power flowing over the line. On average, around 3 to 5% of power is lost in a transmission system in the form of heat. However, overall, electric transmission is a relatively efficient way of transporting energy to end users as compared with other forms of energy transport and use.

Question:

Is the guaranteed wind power capacity high enough to be worth constructing these turbines?- Rainer Egle

Answer:

The applicant has collected site specific wind data from eight separate meteorological towers in the area. The data clearly indicates that this site is a viable location for wind development. Without a viable wind resource, the project would not be feasible.

Question:

How much energy is needed to build and install a wind turbine until it is generating its first energy?-Rainer Egle

Answer:

The applicant states that the comparison of energy used in manufacturing a wind turbine with the energy produced by a wind turbine is known as the "Energy Payback Time" (i.e. how long does the wind project need to operate to generate the amount of electricity that was required for its manufacture and construction).

The applicant further states that several studies have looked at this question over the years and have concluded that wind energy has one of the shortest energy payback times of any energy technology. A wind turbine typically takes only a few months (3-8, depending on the average wind speed at its site) to "pay back" the energy needed for its fabrication, installation, operation, and retirement.

Question:

Economic justification must be compared to the loss in local economy and tourism due to the negative impacts of wind turbines in this area- Mary Beth Nolette

Answer:

The applicant states that according to the American Wind Energy Association "there is no evidence that wind farms reduce tourism, and considerable evidence to the contrary. For example, in late 2002, a survey of 300 tourists in the Argyll region of Scotland, noted for its scenic beauty, found that 91% said the presence of new wind farms "would make no difference in whether they would return." Similar surveys of tourists in Vermont and Australia have produced similar results. Many rural areas in the U.S. have noted increases in tourism after wind farms have been installed, as have scenic areas in Denmark, the world's leader in percentage of national electricity supplied by wind. Other telling

indicators: local governments frequently decide to install information stands and signs near wind farms for tourists; wind farms are regularly featured on post cards, magazine covers, and Web pages." www.awea.org.

Question:

Will the electricity produced by this wind project reduce the electricity rate in ME?

JoAnne Hinkelman

Answer:

PUC states that in the absence of a power contract to Maine consumers, the generation from this project alone will not have a significant impact on electricity rates. However, wind projects like the Rollins Wind Projects spread across Maine and New England will reduce the regions reliance on natural gas, reduce volatility, and put downward pressure on regional electricity rates.

Question:

Have the regulatory agencies in ME done extensive in depth research on industrial wind power developments?- JoAnne Hinkelman

The Department reviews applications for a variety of development types under the Site Law. Each individual development is reviewed in accordance with the Site Law standards in order to determine if the impacts of that proposal are acceptable. Each development brings with it unique aspects that are particular to that development type of proposed project location. The Site Law was recently changed by the Maine State Legislature to incorporate unique review standards and criteria for wind power developments. These new standards were developed through the Governors Task for on Wind Energy Development in 2007.

Stray voltage:

Question:

From faulty ground lines connecting towers- Can we guarantee no negative effect from stray voltage on wildlife, domestic animals and humans?- Michael Thurlow

Answer:

Stray voltage can be the result of the normal return current through the earth and a neutral conductor. The normal return current in the Rollins Wind Project will be minimal since the load flow is balanced in all conductors. In addition, the power from the Rollins Wind Project will be delivered entirely to the transmission line and not at distribution voltage. No electrical current can flow into the ground unless there is a short circuit. In the event of such a short, the protective relays will trip off power transmission in a third of a second.

Transmission lines:

Question:

Existing line 64- capacity. Rollins project would feed into this line. New intermittent renewable generation over Line 56 would displace existing renewable generation that can provide capacity to ME on Line 64. Does Line 64 have the capacity to handle the load and surges of maximum output from wind turbines? Brad Blake

Answer:

PUC states that the project will not be allowed to interconnect to the grid if it would cause any stability or reliability problems.

Question:

If the capacity of Line 64 is exceeded, which source must be curtailed? Does ISO-NE tell First Wind to shut down specific turbines? Brad Blake

Answer:

PUC states that the most expensive generation would be curtailed first.

Wind:

Question:

Gov. Wind Power Task Force hired consultants to perform analysis on wind power potential in ME. Lower class wind was evaluated (power range 0), which was the rating for the Lincoln area. Projects in this power range have not been proven in ME.. First Wind states that data gathered from the met towers shows the potential, but never share the data. Could it be that the potential for tax subsidies to be earned is more important than the actual amounts of electricity generated? Mary Beth Nolette

Is there sufficient wind in this area?- JoAnne Hinkelman

Answer:

Evergreen Wind Power III, LLC states that the strongest, steadiest winds w/greatest potential for producing power in ME is in the winter and the largest energy demand in Southern ME is in the summer.

Question:

So, how efficient will these turbines be?- Mary Beth Nolette

Answer:

Evergreen Wind Power III, LLC states that the comments referenced focus on the capability of the wind regime at the Rollins site to generate electricity. The Governor's Wind Task Force report included a Site Screening Analysis (Appendix E). The map associated with that analysis indicated that the Rollins area had a lower class wind resource, but had not been proven based on modeling. It also noted that "actual wind

velocities may differ, based on field data gathered by a developer." (Task Force Report, page 58). That is precisely what the applicant has done through the collection of site specific wind resource data from eight meteorological towers in the Rollins area. That data indicates this is a viable location for wind energy production. Without a viable wind resource, the project would not be feasible.

Size of turbines:

Question:

Can they be smaller and therefore, less visible? -Rainer Egle

Rollins turbines = 300m tall and generate 1.5MW
European turbines = 150m tall and generate 5 MW

Answer:

Evergreen Wind Power III, LLC states that the Rollins turbines have a hub height of only 80 meters and an overall height of approximately 120 meters, not the 300 meters noted in the comment. In comparison, a 5 MW turbine has a 120 meter hub height and overall height of approximately 180 meters.

Decommissioning:

Question:

Would the concrete and steel rebar be removed, soil put back and be allowed to re-grow? -Rainer Egle

Answer:

The Department states that in Section 29 of the application, the applicant has explained that in order to remove the turbine foundations, the topsoil will first be removed from the area surrounding the foundation and stored for later replacement. Turbine foundations will then be excavated in order to remove all anchor bolts, rebar, conduits, cable, and concrete to a depth of 24 inches below grade. The remaining excavated areas will be filled with clean sub-grade material of quality comparable to the immediate surrounding area. The sub-grade material will be compacted to a density similar to surrounding sub-grade material. All unexcavated areas compacted by equipment used in decommissioning shall be de-compacted in a manner to adequately restore the topsoil and sub-grade material to the proper density consistent and compatible with the surrounding area.

In addition, all disturbed areas will be reseeded to promote re-vegetation of the area to a condition reasonably similar to the original condition. Restoration shall include leveling, terracing and mulching as necessary.

Blasting:**Questions:**

Will blasting cause disruption of wells downhill?- Margie Deschene

Will blasting cause arsenic contamination of wells? – Joan Goodwin

Can a full evaluation of bedrock be done to estimate how much blasting will need to be done prior to construction?- Mary Beth Nolette

Answers:

DEA states that blasting at this site will be required to meet the standards used for quarries (38 MRS §490-Z(14)); these standards include requirements for maximum allowable air overpressure and ground vibration, and have proven to be adequate for protection of wells and property, and blasting at this site will generally use much smaller charge weights than are commonly used in blasting. Most of the blasting for this project will take place at a significant distance from any wells, and there will be little or no risk of adverse impact. The applicant has assessed the bedrock composition at the site to identify any areas where exposure of bedrock could adversely affect water quality, and to identify areas in which blasting may be required during construction of the project. Based on this information and other information available to the Department, significant adverse impact on groundwater quality is not expected. Department staff will be inspecting the area of the project before, during, and after construction to ensure that the areas of blasting and other disturbance, and that the rock types in the blast areas, are consistent with the information obtained thus far.

Question:

Will they give warnings of blasting prior to occurrence?- Joan Goodwin

Answer:

DEA states that standard safety warnings, such as clearly audible horns, are required prior to any blast; the applicant may choose to provide additional notification but those measures are beyond the scope of Department review.

Question:

How will blasting effect the water quality?- Michael Thurlow

Answer:

DEA states that the standards prohibit discharge of debris from blasting to protected resources, and require the applicant to keep detailed records of each blast so that any concerns raised can be investigated.

Erosion, water pollution, degradation of the area & herbicide use:

Questions:

Clearing of vegetation, widening of roads, herbicide use, motor oil dripping from turbines (transformer at base of each turbine holed 500+ gallons of oil- poisoning water and soil.

How will this project impact the environment?- Margie Deschene

How will erosion, runoff pollution and herbicide use be contained?- JoAnne Hinkelman

Will water quality will be compromised from construction?- Michael Thurlow

Answer:

DEA stated that construction on new impervious area can increase the amount of stormwater runoff leaving the development and the may impact the quality of the runoff. The Site Location and Development Act refer to the standards set forth in the Stormwater Management Law to address these impacts. The relevant standards are the Basic and General Standards.

The Basic Standards address erosion and sedimentation control, inspection and maintenance, and "housekeeping" issues. This standard requires a comprehensive erosion control plan that identifies the appropriate kind of erosion and sediment control and the location for that control. Detail sheets, provided for the contractor, show the correct installation of the controls used. During construction inspections and maintenance of these controls are recorded in a log book maintained at the site. For larger projects such as these an independent third party inspector reports to the department about the erosion and sedimentation controls on a weekly basis and subsequent staff visits to the site also cover the erosion and sedimentation controls in place.

Through the General Standards, applicants must provide treatment for 75% of the impervious linear area and 50 % of the developed linear area, and 95% non linear impervious area and 80% non linear developed area. This treatment includes water quality treatment, thermal impacts, and protection of streams from increased high frequency flows that lead to stream degradation. For lake watersheds, the applicant is required to use the Phosphorous Methodology outlined in "Phosphorous Control in Lake Watersheds: A Technical Guide to Evaluating New Development" to assess the development. This methodology assesses the amount of phosphorus expected to runoff of the projects developed surfaces and requires treatment to bring this level back to a manageable level.

With regard to herbicide use, the applicant will be required to comply with all label requirements and standards established by the Maine Board of Pesticide Control. In addition the applicant has agreed to not use any herbicides in or within 100 feet of any inland wading bird and waterfowl habitat, within 75 feet of any vernal pool or salmon stream, or within 25 feet of any stream.

Visual & property value degradation:

Question:

How will the project not cause the degradation of aesthetic value of the land?- Margie Deschene, Mary Beth Nolette

Answer:

Title 35-A § 3452 (1) in pertinent part provides that: "In making findings regarding the effect of an expedited wind energy development on scenic character and existing uses related to scenic character pursuant to... Title 38 § 484 (3) or § 480-D the Department shall determine, in a manner provided in subsection 3, whether the development significantly compromises views from a scenic resource of state or national significance... Except as otherwise provided in subsection 2, determination that a wind energy development fits harmoniously into the existing natural environment in terms of potential effects on scenic character and existing uses related to scenic character is not required for approval under... Title 38, section 484 § 3."

Based on the statutory provision above approved by the Maine State Legislature determined that potential effects on scenic character including aesthetic value could not be used by the Department in determining if a proposed wind development would have a negative or unreasonable effect on the environment.

Question:

Will there be a decrease in property values for land close to existing wind projects?- Roper

Answer:

The Department has no basis to answer this question. In general, the Department does not use property valuation as a basis for determining if the permitting requirements have been satisfied for a particular project.

Question:

There are substantial viewpoints within 5 miles of the proposed industrial zone Should there be a visual impact study done to include short, medium & long distance visual impacts to the region? -Mary Beth Nolette

Answer:

An applicant for an expedited wind energy development must provide the Department with a visual impact assessment of the development if the Department determines such an assessment is necessary. There is a rebuttable presumption that a visual impact assessment is not required for those portions of the development's generating facilities that are located more than 3 miles, measured horizontally, from a scenic resource of state or national significance. The Department may require a visual impact assessment for portions of the development's generating facilities located more than 3 miles and up to 8 miles from a scenic resource of state or national significance if it finds there is substantial evidence that a visual impact assessment is needed to determine if there is the potential for significant adverse effects on the scenic resource of state or national significance...

In making its determination whether an applicant for an expedited wind energy development must provide a visual impact assessment, the Department considers:

1. The significance of the potentially affected scenic resource of state or national significance;
2. The existing character of the surrounding area;
3. The expectations of the typical viewer;
4. The expedited wind energy development's purpose and the context of the proposed activity;
5. The extent, nature and duration of potentially affected public uses of the scenic resource of state or national significance and the potential effect of the generating facilities' presence on the public's continued use and enjoyment of the scenic resource of state or national significance; and
6. The scope and scale of the potential effect of views of the generating facilities on the scenic resource of state or national significance, including but not limited to issues related to the number and extent of turbines visible from the scenic resource of state or national significance, the distance from the scenic resource of state or national significance and the effect of prominent features of the development on the landscape.

A finding by the Department that the development's generating facilities are a highly visible feature in the landscape is not a solely sufficient basis for determination that an expedited wind energy project has an unreasonable adverse effect on the scenic character and existing uses related to scenic character of a scenic resource of state or national significance. In making its determination the Department must consider insignificant the effects of portions of the development's generating facilities located more than 8 miles, measured horizontally, from a scenic resource of state or national significance.

Question:

Why did DEP allow Mars Hill to be built so close to human habitation? -JoAnne Hinkelman

Answer:

The Mars Hill development received a permit from the Department and was constructed in accordance with all applicable standards pursuant to the Site Law.

Lighting:

Question:

How will the permanently lit, blinking lights on the towers (light pollution) impact visual quality? Margie Deschene, Roper, Mary Beth Nolette

Question:

How will shadow flicker impact visual quality? - Margie Deschene

Answer:

The Department states that according to the application, an FAA approved lighting plan for the Rollins project includes a single, synchronized, pulsing red light on 24 turbines. Lighting is necessary for aviation protection requirements. The potential visual impact

associated with required FAA lighting is discussed in the Visual Assessment included as Appendix 30-1 of the application. As noted in that report, the limited vertical beam spread of the lights used reduces the impact on potential viewers on the ground. Typically, viewers do not look directly into the lights and they do not produce glare, as they are designed to be visible primarily to aircraft and not to viewers on the ground. Visual Assessment of the Proposed Rollins Wind Project on pp.3-4.

The potential shadow flicker associated with the Project was analyzed using the Windpro software recommended by the Department. Shadow flicker is discussed in Section 26 of the application, and the results of the shadow flicker modeling are included as Appendix 26-1 to the application. As discussed in Section 26, there are only five receptors that show the possibility of any shadow flicker. Four of the five locations are not expected to have any impact due to existing vegetation. Nonetheless, the applicant has entered into agreements with each of the five potentially impacted landowners that specifically acknowledge possible shadow flicker on those parcels.

Turbine Safety:

Question:

How susceptible are the blades and turbines to metal fatigue? Is the resin on the blades easily damaged by wind? Could the blade get torn off? -Margie Deschene

Answer:

According to information submitted in the application, the GE turbine is commonly used in the industry and does not have a history of blade failure. There are over 8000 GE 1.5 MW machines in use around the world. GE employs state of the art manufacturing using high strength materials. Each blade includes a protection system to conduct lightning strikes safely to ground. Additionally the turbines are equipped with back up battery power such that even if the grid fails, the blades can pitch to stop rotation in the event of high winds or emergency (see Section 27, Public Safety).

Noise:

Question:

Should there be an independent study done for sound echoing across lakes and off mountains?- Margie Deschene

Answer:

The sound study complete by the applicant accounted for the effects of sound propagation off the lake and mountain surfaces surrounding the proposed project.

Question:

What are the health effects caused by low frequency noise and infrasound in addition to nausea, vertigo, hypertension, chronic sleep disturbances?- Roper, Margie Deschene

Answer:

The Maine Center for Disease Control (MCDC) stated that according to a 2003 Swedish EPA review of noise and wind turbines: "Interference with communication and noise-induced hearing loss is not an issue when studying effects of noise from wind turbines as the exposure levels are too low." In their review they found no evidence in peer-reviewed medical and public health literature of adverse health effects from the kinds of noise and vibrations heard by wind turbines other than occasional reports of annoyances. Most studies on health effects of noise have been done using thresholds of 70 dBA or higher outdoors, much higher than what is seen in wind turbines. Sleep disturbance is another concern, and the World Health Organization (WHO) guidelines for community noise recommend that outdoor noise levels in living areas for nighttime not exceed 45 dBA, which is consistent with Maine law.

Question:

With a house that is located within 3,200 ft of a cluster of 4 turbines and within 45dBA range, would these turbines exceed the allowable limits? The home owner has already taken decibel readings inside and outside. The outside decibel readings are:

Avg. morning: 27.02dBA

Avg. afternoon: 30.39dBA

Avg. evening: 30.90 dBA

Brenda Goodwin

Answer:

The answer will depend on a number of factors including predominant wind direction and topography as well as specific atmospheric conditions at the time of the reading. The noise propagation model used to estimate the predicted sound level takes into account typical conditions at the measurement point to predict the normal expected sound output. The Department still has some questions with regard to the models ability to accurately predict the impacts associated with short duration repetitive sounds that come from wind turbines. While the model used is widely accepted as accurate, the Department is requiring the applicant to test the model through a post-construction compliance assessment protocol, which will actually measure compliance during the best conditions for sound propagation rather than the average hourly sound equivalent. The applicant will be required to adjust the operation of the facility if the compliance program documents that SDR sound is actually a problem under the worst case scenario.

Question:

Why is noise being measured in dBA and not in dBC?- Dr. Gary Steinberg, Bea Szantyr

Answer:

The Chapter 375 noise standards were developed through a stakeholder process. The stakeholders designed the noise regulation to conform to the commonly accepted (dBA) industry standards for sound measurement. With regard to this issue, The Department's sound consultant states that wind turbines rotating under conditions necessary for power production produce a measurable broadband amplitude modulation of sound ("swoosh") at ± 1 Hz. The A-weighting scale is widely used in noise ordinances and sound control

regulation. The introduction of C-weighting for the assessment of wind turbine sound is preliminary and unrefined on a broad basis.

Question:

How accurate is Windpro at evaluating noise data?- Mike DiCenso

Answer:

Windpro is a program used to model shadow flicker and is not used in the evaluation of sound. The applicant used a CADNA/A software to model sound from the proposed development. The Department's sound consultant noted that the wind project prediction model based on CADNA/A software with incorporation of an uncertainty factor of + 5 dBA and the intentional omission of possible attenuating factors (lake surfaces and foliage) yields an estimate that does not account for potential excessive amplitude modulation under stable ground level atmospheric conditions. Such amplitude modulation could create short duration repetitive sounds and would therefore require a 5 dBA penalty to be applied to measured or modeled sound levels. This would potentially cause protected locations with greater than or equal to 43 dBA sound levels to receive greater than predicted sound levels, even potentially in excess of 45 dBA. The 2 possible locations where short duration repetitive sounds could occur as a result of amplitude modulation occurring at stable ground level atmospheric conditions are measurement locations R2 and R3 along Route 6.

To account for the potential excessive amplitude modulation under stable atmospheric conditions and ensure that the 45 dBA maximum sound level limit is met, the applicant is being required to implement an operational compliance assessment methodology for use during very selective, meteorological and background sound conditions. The compliance assessment method will enable compliance measurements to be determined under the most favorable conditions for sound propagation and maximum amplitude modulation.

Question:

How are sound level standards established? For rural environments? -Bea Szantyr

Answer:

The Chapter 375 noise rules establish specific A-weighted compliance thresholds for locations based on the typical zoning or development pattern location in the area. Most rural environments fall under a 45 dBA nighttime and 55 dBA daytime limit at all protected locations surrounding a proposed development.

Question:

What assurances is there that sound production will not exceed the standard set? What happens if they do? - Bea Szantyr

Answer:

The applicant is required to conduct a post-construction sound assessment to determine the accuracy of the predictive model. If the model is found to be inaccurate the applicant

will be required to submit a operation protocol that ensures that the require sound level limits will be maintained at all protected locations.

Question:

What are the results of the assessment of the Mars Hill project? - Bea Szantyr

Answer:

The Mars Hill project was determined to be in compliance with the 50 dBA requirement authorized in the Department permit.

Question:

What other project outcomes are reviewed before approving any given requests? Bea Szantyr

Answer:

The Department reviews each application with regard to all the permitting criteria stipulated in the Site Law Rules. No project can be permitted unless they demonstrate that they have satisfied each criteria.

Question:

Are the project reviews utilized to evaluate the appropriateness of the sound level standards? - Bea Szantyr

Answer:

The Department contracted with an outside peer review agent to evaluate the applicant's sound study and conclusions. The Department relied upon the expertise of their consultant to modify the applicant's proposal, as necessary to ensure that the project can be developed in accordance with the Chapter 375 noise rules.

Question:

Have the Wind project developers presented any data concerning negative feedback or outcomes for review? - Bea Szantyr

Answer:

The developer did not provide information in the application regarding feedback from the local community. The Department review of the application, however, is an open public process and many questions and concerns relative to the project have been submitted into the permitting record for consideration.

Question:

What assurances exist that there is balanced representation of the impact, theoretical and actual? - Bea Szantyr

Answer:

The application contains detailed information regarding the proposed impacts of the development on the environment. The Department utilizes a formal review process that gives experts within the Department and other state agencies an opportunity to review the data and conclusions made by the applicant. In many cases, review comments result in changes to the application to more accurately reflect the State's opinion of impacts from the proposed project.

Question:

How will noise affect wildlife in the area? Affect his cow-calf operation?- Michael Thurlow

Answer:

Neither the Department nor MDIFW are aware of any scientific peer reviewed studies that document a causal relationship between sound produced by wind turbines and effect on wildlife or domestic animals.

Questions submitted by Dr. G. Steinberg in a 2-13-2002 submittal

These questions have been consolidated into broad topic areas to facilitate the response.

Question:

How can wind projects have been considered in this area if the noise standard dates to 1979? What wind turbines were in use at the time, if there were no wind turbines in use, how can you say that the standards you are using are adequate?

Answer:

The Chapter 375 noise standards were created through a stakeholder process and were designed in conformance with standard industrial sound compliance models. The Department is confident that the rules still represent the best available method for determining if projects will have an unreasonable impact on adjacent uses. We are working with the wind power developers to refine the models predictive capability to better predict the exact impacts associated with short duration repetitive sounds from wind power facilities.

Question:

Why did you remove the BEP from this process? If you did not remove them, who did? What was the scientific reason for removing their review? Are there any reasonable requirements, scientifically supportable requirements based on standards of available and optimal review?

Answer:

The Legislation approved last session by the Governor's Task Force on Wind Energy prohibits the BEP from taking primary jurisdiction on any expedited wind energy project. The BEP can still hear an appeal of any permitting decision made by the Department. It

is the Department's understanding that the BEP action was taken to avoid delays in the DEP permitting process.

Question:

Does DEP require optimal standards of noise review, or merely dated, inadequate standards when compared to current research, for protection of the public? Please give the most recent date of Chapter 375 standard changes and where I could review those standards. Do you consider current review of noise under Chapter 375 optimal based on the present science in the area?

Answer:

Please see answer above. The noise rules were last revised on November 21, 1989. You can find the most recent version at:

<http://www.maine.gov/dep/blwq/docstand/siteawpage.htm#rule>

Question:

In Chapter 375, is there any allowance for or inclusion of dBC measurements in any way? If not, why not?

Answer:

No, dBC is not used in the Chapter 375 rules as a compliance measure for sound. Wind turbines rotating under conditions necessary for power production produce a measurable broadband amplitude modulation of sound ("swoosh") at ± 1 Hz. The A-weighting scale is widely used in noise ordinances and sound control regulation. The introduction of C-weighting for the assessment of wind turbine sound is preliminary and unrefined on a broad basis.

Question:

Is RSE data being independently reviewed by DEP? Have real time readings been made of the Rollins area as they relate to dBC or dBA without computer modeling? How accurately does 0 attenuation propagation figure measurement variable replicate real world data? How would one compare this model to real world data for accuracy? Are there such comparisons available? Are reflective components built into RSE data for Rollins? Is real world data, from noise generators more accurate than those used here in the application from RSE. Do you believe real world data is needed, not merely modeling? Who set the standard? Are such measures available to you now?

Answer:

Yes, The Department has contracted with an outside peer agent to review the sound model developed by the applicant. The applicant has not as yet taken actual ambient noise readings at the proposed project site; however, such readings will be taken prior to operation to provide a baseline for compliance measurements. dBC is not a Department standard, so no dBC measurements will be required by the Department. Reflective components were built into the RSE sound model. Real world data is needed in order to determine compliance; however it is not possible to gather real world data of a proposed

development. The model offers the best available method for predicting the sound propagation from a proposed development.

Question:

Do dBC measurements, as a present day determinant of low frequency emission by DEP, present problems for procurement and use of equipment?

Answer:

dBC sound is not a compliance standard pursuant to Chapter 375 noise rules.

Question:

Do you have the mandate to utilize dBC measurements, if they were chosen to be utilized? Does expedited process review of this project allow you the time to review real-time DBA readings in allowing for water body and terrain unique to this project? Are there any real time noise Studies in dBA available for review in the Rollins area pre-construction?

Answer:

dBC sound is not a compliance standard pursuant to Chapter 375 noise rules. Sound modeling is the standard mechanism to predict the anticipated sound from a proposed development. Real time dBA measurements from a different development would not necessarily be transferrable from site to site.

Question:

Has Kamperman/James analysis for community noise turbine control been fully reviewed (enclosed)? Do you find their findings more or less accurate than the present standards in use by DEP?

Answer:

The Kamperman/James works were reviewed by the Department's peer review agent. The Department is satisfied with the current sound modeling protocol provided that the applicant complete the post-construction sound compliance assessment in accordance with the recommendation contained in the Department licensing decision to ensure that the model accurately predicts the short duration repetitive sounds generated under ideal sound propagation conditions.

Question:

Are dBC levels a valid measurement of potential perceptual health related effects as they relate to Turbine Emission? If you will not comment on this fact, what is your opinion? If not, why not? How do present regulations address this concern? Have you ever made utilization of dBG as it relates to health issues?

Answer:

Based on peer review comments, the Department finds no concrete scientific basis to conclude that a dBC or dBG compliance standard would provide an improved method of

determining sound level compliance. The dBA standard provides a reasonable compliance measurement.

Question:

Were you aware of the "Tuning and Sensitivity of the Human Vestibular System to low-frequency Vibration" study that is enclosed? Do you think that this could be applied to WTS syndrome? Would this affirm or add to that research by Dr. Piedmont? Do you believe that the impacts of VOR research in WTS syndrome science may emanate from this study? Are you medically qualified to review and potentially utilize this new information as it relates to Wind Turbine Syndrome? Do you believe the WTS exist? Is it valid science in your estimation, o professional opinion?

Answer:

The CDC comments that some have pointed to low frequency vibrations emitted from wind turbines as a possible source of adverse health effects. One recent study commonly cited is: "Tuning and sensitivity of the human vestibular system to low-frequency vibration", Todd, et al. Neuroscience Letters, 2008, which can be found at: <http://www.ncbi.nlm.nih.gov/pubmed/18706484>.

This study indicates that the human vestibular system is sensitive, which means it shows a physiological response, to low-frequency and infrasound vibrations of -70 dB, indicating that human seismic receptor sensitivity of the vestibular system may possibly be on par with the frog ear. However, sensitivity, i.e. showing a physiological response, does not mean there are adverse effects. Low frequency and infrasound (lower than what is perceptible) vibrations are very commonly in our background, and known to be emitted from many household appliances and vehicles. Exposure to very intense low frequency noise can be annoying and may adversely affect overall health, though these levels appear to be more intense than what is measured from modern wind turbines.

Maine noise regulations assess the distribution of noise generated by a regulated project based on its frequency and can regulate noises with a specific tonal contribution that outweighs the other frequency components of the generated noise.

Question:

Has your current siting regulation worked well in Mars Hill, preventing any untoward health effects? How has Evergreen Wind III modified its DEP application so as not to repeat the situation in Mars Hill? Has the computer model been significantly modified in any way? Is there present litigation ongoing in Mars Hill concerning Wind Turbine Siting? Has the Department reviewed Mars Hill "over emission" on Turbine noise, and has that review held up in litigation?

Answer:

The Department continues to learn from each experience permitting wind projects. The Rollins application is different from Mars Hill in several respects including the inclusion of a 5dBA adjustment within the model calculation to correct for model accuracy and the fact that the applicant elected to apply the quiet limits of 55 dBA daytime and 45 dBA

nighttime at all protected locations. The Department is not aware of any pending litigation regarding Mars Hill.

Question:

Have any dBA studies utilized by the Wind Turbine industry been scientifically peer reviewed? If so, can you give me some of the independent reviews of your noise standards as they relate to setbacks? Is it true that the present rules being used 55 dBA/1000 feet, setbacks, are the same used in the Wisconsin Task Force? Is it true that the Wisconsin Task Force rules were not based on science but written by lawyers from Florida Power and Light?

Answer:

The Department did not obtain evidence of peer reviewed dBA studies regarding wind turbines. The Department rules are not based on any work in Wisconsin and the 55 dBA daytime limit within Chapter 375 does not link to any specific setback. The compliance point is the protected location regardless of distance from the generation site.

Question:

Does noise that is generated from wind turbines warrant particular attention as it relates to 1 Hz amplitude modulation characteristics? Do Modern turbines (upwind types) produce amplitude modulation characteristics? What could be the significance of such low level modulation be on human Cochlear hearing apparatus? Could this be applied to WTS as a cause of these symptoms? If you do not fully understand the implications as it relates to WTS, is the Department willing to extend the review of this medical literature to DHHS for review? Is it not important for the DEP to extend the review of human affects of wind turbines to be sure human safety is of the utmost concern, and not just adequate concern? Do you believe you can adequately review medically related turbine science as it is related to this project, without the aid and input of DHHS? Does the DEP have the time to utilize the present medical literature to help in determination of the impacts of WTS to these turbine projects? Will any health review by DHHS be required by your process for review of the Rollins wind project? Did you have concerns of health related problems in turbine replacement? Does expedited process allow the depth of study needed to utilize new developments in the area of health impacts as presented by WTS and the most recent publication by Dr. Pierpont et al from 2008-2009 publication?

Answer:

The Department did have the MCDC review the proposed project. See the MCDC answers relative to health related concerns above.

Question:

Have you reviewed the findings of C P van den Berg "The effects of atmospheric stability on wind turbine sound and microphone noise?" Do you think this presents issues as it relates to ambient noise masking turbine noise?

Answer:

The CP Van de Berg study was strongly considered by the Department's noise consultant and was the primary bases for the Department's requirement to for the applicant to prepare a compliance assessment model based on wind turbine noise propagation under stable atmospheric conditions.

Question:

Do you think an area, bounded by 8 lakes, with rolling hills in the center, has the same characteristics as flat terrain as far as noise propagation? Is there anything that might concern you as far as attenuation, refraction and reflection of low frequency noise emission? Are the characteristics of terrain at Rollins and Rocky Dundee areas the same as those at Mars Hill? If not, can an RSE modeling generated be accurately modified to reflect these differences? Is this a real study or just data input if you were asked to verify its real word validity? Have you reviewed the study or "Propagation of Noise from Wind Turbines on-shore and off-shore" (enclosed, Bo Sondergaard)? Such a study is adding information to the above concerns involving turbine noise over water. Should this be applied to current Chapter 375 noise standards for wind industrial developments in ME? Are you aware of any independent review of the above?

Answer:

The CADNA/A model prepared by the applicant and reviewed by the Department factored in the individual characteristics present within the project area. The model was developed based on worse case condition to develop a conservative estimate of predictive sound generation from the proposed development. The Department is satisfied that, provided the applicant completes the required compliance assessment plan, and any required operational protocol modifications, that the development will not have an unreasonable effect on the environment or the existing uses of the area.

Question:

Is there any review of Danish emission standards for wind farms and setbacks? Would such info be of value for Rollins review?

Answer:

The Department did not review the Danish emission standards.

Question:

Will expedited process allow for application of any dBC research on wind turbine emission?

Answer:

See answers related to dBC above.

Question:

What will be the wind turbine affects, from both light and noise, as they relate to autistic and attention deficit disorder for children and adults? Are you aware of them at Mars Hill? Are you concerned? Should such concern be addressed at DHHS?

Answer:

See MCDC answers above regarding health effects from wind turbines. The Department encourages continued dialogue regarding health concerns on all matters to continually keep abreast of current medical findings.

Question:

Is conflict of interest more or less exacerbated by wind farm developers doing their research with their own hired consultants? Should independent consultants be hired for projects, in no way financially connected with the developer? Has this been done for this project?

Answer:

All applications submitted to the Department for review are completed by the applicant or the applicant's agent(s). The Department review is required to ensure that the information presented is complete and accurate. If the application is incomplete or inaccurate the Department requires that the record be revised or updated as necessary prior to making a final permitting decision.

Question:

Has it been found that residents living within 2 miles of wind farms are experiencing sleep disturbances? Are these real or imagined human effects?

Answer:

CDC states that sleep disturbance is a concern; however the WHO guidelines for community noise recommend that outdoor noise levels in living areas for nighttime not exceed 45 dBA, which is consistent with Maine law.

Question:

Are noise characteristics of wind turbines unique, or can they be classified with other standard industrial noises according to the most recent literature?

Answer:

The applicant has demonstrated, through the creation of a sound propagation model, that the expected operational sound levels associated with the proposed Rollins Wind Project will be in compliance with the 45 dBA nighttime limit at all protected locations adjacent to the proposed project. While the sound modeling techniques used by the applicant are in keeping with standard industrial sound modeling protocols, the Department finds that there is sufficient concern related to the model's ability to accurately predict SDR sounds to require the applicant to implement the compliance assessment plan designed to measure compliance under the most favorable conditions for sound propagation and maximum amplitude modulation. If the Rollins Wind Project is not in compliance with Department standards, the applicant must submit a modified operation protocol that demonstrates that compliance will be maintained at all the protected locations surrounding the development.

Question:

Do national and international community noise standards address the low frequencies from wind turbine emissions? How is the World Health Organization utilized in these wind turbine issues by DEP?

Answer:

See answers to above questions.

Question:

Are you at all concerned about expedited placement of wind facilities near more highly populated rural lakefront communities? If not, why not?

Answer:

All projects regardless of location must meet the applicable permitting standards.

Question:

Are you concerned about increased litigation from health related affects of increased wind turbine placement in Maine, should this occur? How could you address this concern?

Answer:

See above answers regarding health effects.

Question:

Are dBA levels sufficient to protect areas with wind turbine emission as related to current setbacks in your opinion?

Answer:

See above answers to this question.

Question:

Is there a concern the pre construction RSE models that dBA levels are too high for the rural environments in Maine? Does Mars Hill give you concern? If the level of dBA emission is above the maximum, are you required to allow it? How much percentage error do you have built in to your regulatory standard, or is there any as written? How would you judge variance from standard? Where is that documented? How is the decision derived at for allowance of higher dBA levels and continued functioning of the wind farm, if you do not shut a project down for over high noise, as is being done in Mars Hill? Will Mars Hill be shut down for exceeding noise emissions? If not, why not?

Answer:

See above answers to these questions. The applicant must demonstrate that they are meeting the sound level limits and the Department has required a specific compliance assessment plan be developed to accurately measure operation sound.

Question:

Please explain, if it were a concern of yours, how to lower the levels of noise emission at residences. How many options do you think are available now to the industry to mitigate problems? Are you concerned at all that the setbacks, as they exist today would double setbacks, or triple them, reduce human WTS syndrome, (if it were to exist)? Do you believe it exists?

Answer:

See above answers to these questions. The applicant has the ability to modify the operation of the wind energy facility under specific conditions if necessary to ensure that operational sound is within the require limits.

Question:

Are low level emissions readily attenuated by wood structures commonly found in Maine that may exist near these developments? If they are not, what is the solution to the present situations that exists at Mars Hill to alleviate their situations? Could the situation at Mars Hill in reference to high level emission in the homes affected there, be preventable in other future wind farm development? How would this be done?

Answer:

The Department review did identify some concern with SDR sound as discussed above. The Department is requiring the applicant to account for SDR in their compliance monitoring.

Question:

Has the Department reviewed "Noise Radiation from Wind Turbines Installed near Homes: Effects on Heath"(with annotated review of the research and related issues) by Barbara Frey BA MA, Peter J. Hadden Bsc.FRICS (enclosed)? How could their findings be applied under the present process of siting as allowed by expedited process?

Answer:

The report was provided to MCDC, however the Department is not aware of the level of consideration given to that specific report.

Question:

If the problems are preventable as far as low level emissions, how would you measure them? What would be the best modality for low level Hz emission measurement from wind turbines, if the present standards have never been reviewed independently? Would dBC be an improvement over dBA measurement for wind farms, in your opinion?

Answer:

See answers above.

Question:

Is it not true that analysis of ambient noise generated by wind must be carefully evaluated with specific equipment, so that ambient noise really is in the range of 20-25 dBA as is the nature in many rural communities? Have the ambient levels been measured in the Rollins area? If so, what are these measurements in the early evening hours, over snow, in clam wind conditions in flat terrain? Has this been done?

Answer:

Ambient measurements will be taken prior to undertaking the compliance assessment plan in order to establish background conditions.

Question:

If wind turbine sounds are not the same as other known noise sources, then are rules that are used without that specificity really valid? If dBA and dBC levels exist for these projects, should there not be a standard of inclusion for this broader bandwidth of frequency components in guidelines for the Department? Do you plan to utilize dBC for this project? If you do not use dBC, are the recent and current standards in place for noise control as they relate to these projects, from a scientific and an availability basis, providing the public and environment the minimal level of safety and protection?

Answer:

See answers above.

Question:

Do you believe expedited process fully meets your mission statement for full and complete process for wind turbine siting or is adequate and non-quantifiable variance allowance the standard?

Answer:

See answers above.

Question:

Do you believe there is health affects involved with wind turbine industrial placement? Are you willing to consider the advanced and current guidelines as used by E-Coustics,(in the enclosed guide to placement of wind turbines in communities), as well as the Noise-Con 2008 Simple Guidelines for Siting Wind Turbines to prevent Health Risk (July 28-31, 2008), in lieu of the poor modeling data of RSE for the Rollins project?

Answer:

See answers above.

Question:

Why is DEP clearly breaching the Governor's Task Force Report as well as Maine PUC, which clearly states (pg.56) that "very steep slopes, lakes" should not be considered for wind power development? From Report on Wind Power Development in Maine, (note 15, pg bottom siting the full source.) This Maine PUC report clearly states that lakes,

such as Lincoln (Home of 13 lakes) should not be considered. Why are you breaching these recommendations?

Answer:

The section of the Task Force Report referenced is describing the methods used to assess the potential for Maine to provide wind power. The analysis assessed the potential for wind energy development across the State and discounted areas where the development would not be practicable due to terrain or the presence of ponds or lakes of State wide significance. While the area of the proposed project is on a mountain the specific project area was chose due to the ability to be constructed on stable slopes and for its overall impact on just two Lakes identified as having State wide significance.

Question:

Do you believe lake regions present unique issues, with surrounding steep slopes, for noise issues in low ambient noise areas? Is 20 dBA over ambient a best practices model to follow? Do you have the responsibility to follow best practices for citizens, or expediency? Does DEP believe it should follow best, most current practices for its citizens in wind turbine siting? Have you fully studied these issues with real data, not computer modeling?

Answer:

See answers above.

Question:

Do you believe that Maine citizens are being used by the industry or others in an ill-conceived, experimental model? Would you like your pharmaceuticals tested and dispensed to the public utilizing a parallel process similar to that designed by THE GOVERNOR'S TASK FORCE? Do you believe that there are more optimal scientific sources available to analyze siting of wind industrial projects than you are presently using, and that Maine citizens will demand any less?

Answer:

All projects that require a permit pursuant to the Site Law are reviewed in accordance with the standards set forth in rule. The Site Law constitutes a comprehensive State review designed to ensure that developments are constructed with no unreasonable effects on the environment.

Question:

It appears that point source noise analysis was utilized by RSE in the Rollins Ridge project. As the sources of noise are line sources of multiple generators, shouldn't a line source study be utilized?

Answer:

The Department and EnRad both reviewed the information that was submitted by RSE based on the point source analysis and are in agreement that the difference between point

source analysis and line source analysis is insignificant; therefore, the Department is satisfied with the point source method that was used for this study.